



## ORAL COMMUNICATIONS

### HOW DO WALL LIZARD EMBRYOS ADAPT TO COLD CLIMATE?

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Oviparous lizards that bury their eggs in the ground require a certain range of soil-temperature for successful hatching. Wall lizards (*Podarcis muralis*) from Italy and France have recently been introduced to the UK, where embryos have to cope with drastically colder soil temperatures compared to their native range. Incubation experiments have demonstrated that lizards introduced from France and Italy have evolved faster developmental rates at low temperatures compared to their native counterparts. To understand the mechanisms underlying this accelerated developmental rate, we set out to analyse gene expression in wall lizard embryos. We applied a split-clutch experiment with native and introduced lizards of both French and Italian origin, and incubated eggs at either cold or warm temperatures. Embryos were collected at a precisely defined developmental stage (limb-bud stage) and subjected to RNA sequencing. Transcriptomes were assembled *de novo* and expression levels for 14,000 transcripts were assessed and compared among the 48 samples. Using this dataset, we addressed the following questions: (1) Is there convergence in gene expression between the independently introduced populations? (2) Do these genes show an ancestral temperature responsiveness in their expression? Our results show that introduced wall lizards from Italy and France have convergently evolved regulatory changes in response to cool incubation conditions. Transcripts that show ancestral plasticity in native populations are particularly likely to show evolutionary responses. Thus, our study indicates that adaptation to cold climate is likely to capitalize on environmentally responsive genes, but also that genes that ancestrally are constitutively expressed quickly can become regulated by temperature.